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<b>(21) International Application Number:</b> PCT/IT89/00084 <b>(22) International Filing Date:</b> 27 December 1989 (27.12.89)  <b>(30) Priority data:</b> 8904 B/89 27 April 1989 (27.04.89) IT  <b>(71)(72) Applicant and Inventor:</b> DE FRANCESCO, Giovanni [IT/IT]; Via Carmelitani Pal.B6, Trappete, I-95037 S. Giovanni la Punta (IT).  <b>(74) Agent:</b> DI GIOVANNI, Italo; Ufficio Brevetti Dott. Ing. Digiovanni Schmiedt, Via Aldrovandi, 5, I-20129 Milano (IT).  <b>(81) Designated States:</b> AT, AT (European patent), AU, BB, BE (European patent), BF (OAPI patent), BG, BJ (OAPI pa- tent), BR, CF (OAPI patent), CG (OAPI patent), CH, + CH (European patent), CM (OAPI patent), DE, DE (Eu- ropean patent), DK, ES (European patent), FI, FR (Eu- ropean patent), GA (OAPI patent), GB, GB (European patent), HU, IT (European patent), JP, KP, KR, LK, LU, LU (European patent), MC, MG, ML (OAPI patent), MR (OAPI patent), MW, NL, NL (European patent), NO, RO, SD, SE, SE (European patent), SN (OAPI pa- tent), SU, TD (OAPI patent), TG (OAPI patent), US.		<b>Published</b> <i>With international search report.</i>
<b>(54) Title:</b> SANITARY TOWEL AND SIMILAR OBJECTS WITH ANTISEPTIC PROPERTIES  <b>(57) Abstract</b>  Sanitary towels in particular nappies, pants for infants, women, incontinent adults, treated with paraoxybenzoate of ethylene glycol phenyl undecyl ether, with chemical products in general having a bactericidal, fungicidal, antiseptic and antifermentative action.		

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Sanitary towel and similar objects with antiseptic properties.

- 5 The invention relates to sanitary towels in the form of nappies, pants and the like to be applied to the procto-uro-genital areas, for infants, women and incontinent adults.
- Sanitary towels by their very nature collect and conserve  
10 organic liquids.
- These liquids, being excretions from the body, tend to decompose, generate unpleasant smells, infect and irritate the delicate and sensitive parts to which sanitary towels are applied.
- 15 The object of the invention are sanitary towels in their various forms of nappies, pants and the like to render them suitable for infants, women and incontinent adults, treated with chemical preparations having a bactericidal, fungicidal and generally antiseptic action.
- 20 The treatment is performed according to the various cases both on the raw materials which make up the fluff, such as cotton-wool and the like, and on the filtering lining and on the fluff or the linings themselves, or on both, during manufacture of the sanitary towels.
- 25 In another process the sanitary towels are treated after they have been manufactured.
- The treatment is performed advantageously by means of a spraying technique which allows either the fluff or the lining material or both to be impregnated thoroughly and  
30 easily, as required, either before manufacture of the sanitary towels or during manufacture itself, or on the finished product.
- A particularly suitable chemical preparation for the purposes of this invention is the following:
- 35 paraoxybenzoate of ethylene glycol phenyl undecyl ether solubilized in distilled water with the aid of

cetyltrimethylammonium chloride.

The effects of the above preparation have been checked by numerous experiments.

5 The following are the results obtained at the "Institute of Health and Preventive Medicine" of the University of Catania on 1 September 1989.

12 commercially available sanitary towels and 12 sanitary towels treated with the aforementioned chemical preparation were used.

10 The sanitary towels were impregnated by means of a spraying technique.

A quantity equivalent to circa 1 ml of the product was distributed evenly on each sanitary towel.

15 In order to test antibacterial activity at the outer surface of the sanitary towel, about 4 cm<sup>2</sup> of the surface layer of each sample were soaked with bacterial suspensions of two micro-organisms:

- Gram-positive (*Staphylococcus aureus* ATCC 9144)
- Gram-negative (*Escherichia coli* ATCC 25922).

20 The concentration of these suspensions was circa 10<sup>5</sup> bacteria per ml.

After an hour of contact in an incubator set at 37°C, the samples were pressed onto the surface of a suitable culture medium (Mueller-Hinton's agar) contained in petri dishes.

25 The dishes were then incubated at 37°C for 24 hours.

The number of colonies which had developed was then counted. The four columns of the table below give the results obtained:

- column A gives the number of colony forming units (CFU) of *S. aureus* in 12 untreated sanitary towels;
- 30 - column B gives the number of colony forming units (CFU) of *S. aureus* in 12 treated sanitary towels;
- column C gives the number of colony forming units (CFU) of *E. coli* in 12 untreated sanitary towels;
- 35 - column D gives the number of colony forming units (CFU) of *E. coli* in 12 treated sanitary towels.

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TABLE

Number of colony forming units (CFU) of S. aureus and of E. coli

	A	B	C	D
5	230	82	250	27
	202	80	230	5
	199	80	195	6
	366	150	190	7
	380	43	340	23
10	215	90	180	0
	255	65	205	15
	389	71	132	9
	108	68	198	11
	263	102	150	7
15	157	88	165	40
	336	114	218	21
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Average	258	86	204	14
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20	Reduction in percentage		77%	93%

As can be seen from this table, the averages of the units (CFU) of S. aureus were 258 for the untreated sanitary towels and 86 for those treated, while the averages of the units (CFU) of E. coli were 204 for the untreated sanitary towels and 14 for those treated.

Therefore the reduction in percentage obtained with the chemical preparation tested on the samples compared was 77% for the units (CFU) of S. aureus and 93% for the units (CFU) of E. coli.

The advantages of the invention are clear.

Using simple means which do not require complicated and costly systems, virtually all the negative consequences which depend on the accumulation of harmful and decomposed substances and their contact, due to the actual nature of sanitary towels, with delicate parts of the human body, are

prevented and fought, above all avoiding irritations,  
infections and unpleasant smells.

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CLAIMS

- 5 1) Sanitary towels in general, more particularly nappies, pants and the like for infants, women, incontinent adults, characterised in that they are treated with chemical preparations having a bactericidal, fungicidal, generally antiseptic and antifermentative action.
- 2) Sanitary towels in general, as in claim 1), characterised in that the treatment by means of chemical preparations is performed on the raw materials which make up the fluff.
- 10 3) Sanitary towels in general, as in claim 1), characterised in that the treatment by means of chemical preparations is performed on the filtering linings of the fluff.
- 4) Sanitary towels in general as in claim 1), characterised in that the treatment by means of chemical preparations is performed on the fluff during manufacture of the sanitary towels themselves.
- 15 5) Sanitary towels in general as in claim 1), characterised in that the treatment by means of chemical preparations is performed on the linings of the fluff during manufacture of the sanitary towels themselves.
- 20 6) Sanitary towels in general, as in claim 1), characterised in that the treatment by means of chemical preparations is performed on the sanitary towels themselves after their manufacture.
- 25 7) Sanitary towels in general, as in claim 1), characterised in that the treatment by means of chemical preparations is performed with a spraying technique.
- 8) Sanitary towels in general, as in claim 1), characterised in that they are treated with a chemical preparation composed of paroxybenzoate of ethylene glycol phenyl undecyl ether solubilized in distilled water with the aid of cetyltrimethylammonium chloride.
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# INTERNATIONAL SEARCH REPORT

International Application No

PCT/IT 89/00084

## I. CLASSIFICATION OF SUBJECT MATTER : several classification symbols apply indicate any

According to International Patent Classification (IPC) or to both National Classification and IPC

IPC<sup>5</sup>: A 61 F 13/15

## II. FIELDS SEARCHED

Minimum Documentation Searched ?

Classification System

Classification Symbols

IPC<sup>5</sup> A 61 F

Documentation Searched other than Minimum Documentation  
to the Extent that such Documents are Included in the Fields Searched \*

## III. DOCUMENTS CONSIDERED TO BE RELEVANT \*

Category \* Citation of Document, \*\* with indication, where appropriate, of the relevant passages \*\* Relevant to Claim No. \*\*

X	US, A, 3093546 (R.L. ATKINSON) 11 May 1963 see the whole document	1-7
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## IV. CERTIFICATION

Date of the Actual Completion of the International Search

12th April 1990

Date of Mailing of this International Search Report

21.05.90

International Searching Authority

EUROPEAN PATENT OFFICE

Signature of Authorized Officer

*Heck*

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**ANNEX TO THE INTERNATIONAL SEARCH REPORT  
ON INTERNATIONAL PATENT APPLICATION NO.**

**IT 8900084**

**SA 33621**

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report.  
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US-A- 3093546		None	

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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